SERVICE MANUAL

HD67

Date	Revise Version	Description
2010.06.01	V1.0	Initial Issue (Separate from ES526_EX536_EX531_CB2800_ EW536_HD66_EX538_HD67 Service Manual V4.0)

Prepare : Alina Check: Approve:

Preface

This manual is applied to HD67 projection system. The manual gives you a brief description of basic technical information to help in service and maintain the product.

Your customers will appreciate the quick response time when you immediately identify problems that occur with our products. We expect your customers will appreciate the service that you offer them.

This manual is for technicians and people who have an electronic background. Please send the product back to the distributor for repairing and do not attempt to do anything that is complex or is not mentioned in the troubleshooting.

Notice: The information found in this manual is subject to change without prior notice. Any subsequent changes made to the data herein will be incorporated in future edition.

HD67 Service Manual

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Manual Version 1.0

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Chapter 1

Introduction

1-1 Highlight

No	Item	Description
1	Power Supply	● Auto-ranging: 100V ~ 240V ± 10%, 50-60Hz
2	Keystone Correction	● +/-16 (Vertical)
3	Power Consumption	● Bright (Normal): TYP 233W MAX 255W @ 110VAC ● STD(ECO) : TYP 207W MAX 230W @ 110VAC
4	Throw ratio	● 1.55~1.7 (Distance/Width)
5	Projection lens	● YM31Z
6	Lamp	●185W Philips E20.9
7	Color Wheel	● 6 Segment; RCBGMY Filter Diameter 40 mm, 3x, 10800 RPM V
8	DMD Chip& Number of active dots	● “TI” DMD 12°, 0.62” 720P, S450, Dark Chip 3 ● Number of active dots: 1280(H) x 720(V)
9	System controller	● TI DDP 2431
10	Altitude&Temperature	● Operating: 0~2,500 ft 5°C~35°C 2,500~5,000 ft 5°C~30°C 5,000~10,000 ft 5°C~25°C

Chapter 2

Disassembly Process

2-1 Equipment Needed & Product Overview

1. Screw Bit (+): 105
2. Screw Bit (+): 107
3. Screw Bit (-): 107
4. Hex Sleeves 5 mm
5. Tweezers
6. Projector

** Before you start: This process is protective level II. Operators should wear electrostatic chains.*

** Note: - If you need to replace the main board, you have to record the lamp usage hour.*

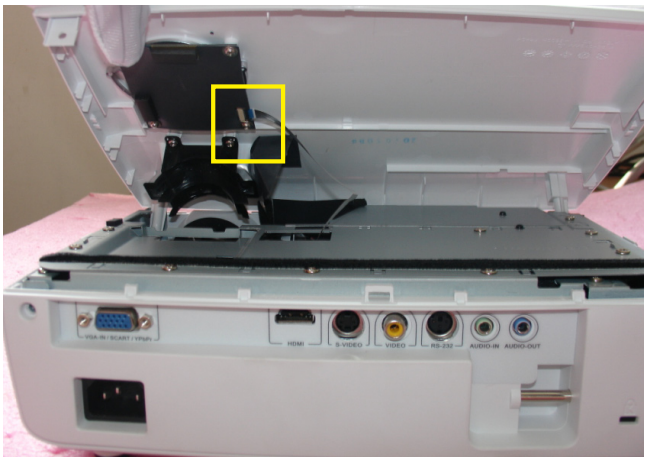
2-1 Disassemble Top Cover Module

1. Unscrew 2 screws (as red circle) from the Bottom Cover.
2. Unscrew 2 screws (as green circle) from the IO Cover .
3. Remove the Top Cover Module.

Note: - When you remove the Top Cover, take care of the connector (as yellow square) which connected Main Board and Keypad Board Module, then unplug it from Keypad Board Module.

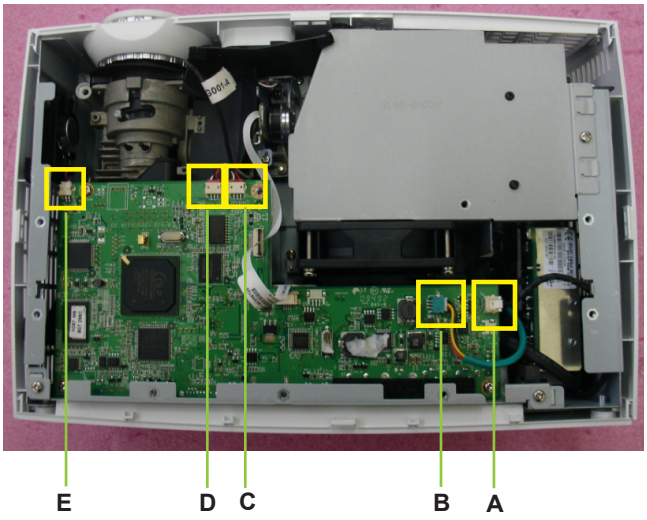
- Avoid damaging by pulling keypad FPC cable.

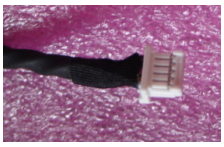
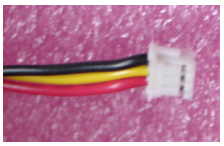
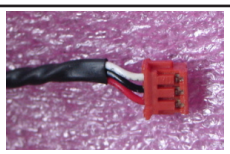
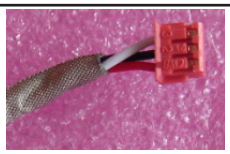
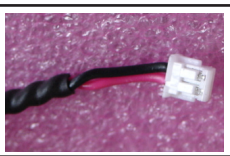
- Make sure the FPC cable plug into the correct ports when assembling it.



2-2 Disassemble Main Board Module

Please refer to the below table details of each connector on Main Board.



Item	Male Connector on Main Board	The key feature	Figure
A	Lamp Driver	Black wire tube (5 pin)	
B	Fan	Compose of Red/Yellow/Black Wire (3 pin)	
C	Photo Sensor	Compose of Red/Black/White Wire and Black wire tube (3 pin)	
D	IR	Compose of Red/Black/White Wire and Gray wire tube (3 pin)	
E	Speaker	Compose of Red/Black Wire and Black wire tube (2 pin)	

2-3 Rod Adjustment

1. Environment Adjustment

   - The distance between the engine and the screen is 2.4 M.

   - This process should be done at a dark environment (under 2 Lux).

2. Procedure Adjustment

   - Change the screen to "white screen".

   - Adjust the screws by using the rod on the engine module to readjust the image.

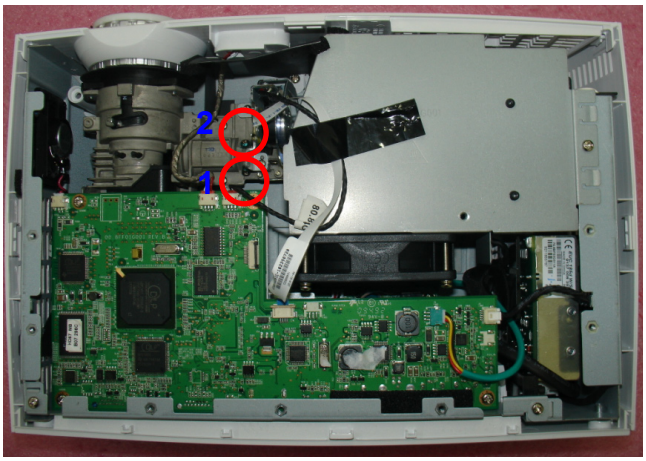
     ("screw 1" should be adjusted first, and then "screw 2". Adjust until the yellowish or bluish parts disappeared.)

3. Abnormal image inspection

   - It should not have any abnormal color at the rim of the image by estimating through the eyes.

Note: - To avoid over adjusting the rod.

- After the opreation, please use the glue to fix the screws.



Z type driver

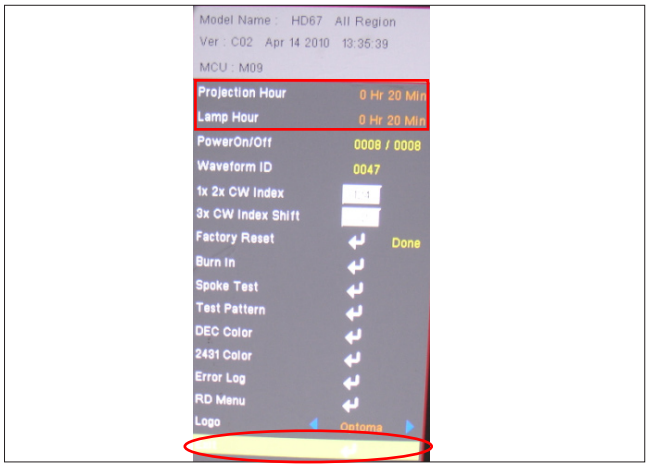
2-4 Re-write Lamp Usage Hour

1. Get into service mode

   - Press "Power", "Left", "Left" and "Menu" buttons sequentially to get into service mode.

2. Use "up" or "down" buttons to select "Exit", then use "left" or "right" buttons to re-write the lamp hour back to previous lamp usage hour.

3. Press "Enter" to exit the service mode.



Note: left key = decrease lamp hour
right key =increase lamp hour

Chapter 3

Trobleshooting

3-1 LED Lighting Message

Message	Power LED (Red / Green)	Temp LED (Red)	Lamp LED (Red)
Standby State (input power cord)	Red	O	O
Power on (warming)	Flashing Green	O	O
Lamp lighting	Green	O	O
Power off (Cooling)	Flashing Green	O	O
Error (Lamp failed)	Flashing Red	O	*
Error (Fan failed)	Flashing Red	Flashing	O
Error (Over Temp.)	Flashing Red	*	O

* *Steady light* O *No light*

3-2 Main Procedure

The other troubleshooting procedures please refer to common service manual 3-1.

No	Symptom	Procedure
1	No Power	- Ensure the Power Cord and AC Power Outlet are securely connected - Check Lamp Cover , Interrupt Switch - Ensure all connectors are securely connected and aren't broken - Check LVPS - Check Lamp Driver - Check Main Board
2	Auto Shut Down	- Check LED Status a. Lamp Fail: Power LED (flashes red), Lamp LED (lights red) - Check Lamp - Check Lamp Driver - Check Main Board b. Over Temp.: Power LED (flashes red), Temp LED (lights red) - Check Fan - Check Main Board c. Fan Fail: Power LED (flashes red), Temp LED (Flashes red) - Check Fan - Check Main Board

No	Symptom	Procedure
3	No Light On	- Ensure all connectors are securely connected and aren't broken - Check Lamp Module - Check Lamp Driver - Check LVPS - Check Main Board - Check Color Wheel - Check Photo Sensor Board
4	No Image	- Ensure the Signal Cable and Source work (If you connect multiple sources at the same time, use the "Source" button switch) - Ensure all connectors are securely connected and aren't broken - Check Main Board - Check DMD Board - Check DMD Chip - Check Color Wheel - Check Engine Module
5	3D Image Abnormal	- Ensure the using 3D glasses is good and you must face the projection. - Ensure the CD in DVD is HQFS format or the graphic card from PC can support 3D format. - Ensure your standing distance is less than 6m from screen. - Ensure the 3D function is on and execute "3D sync invert" in OSD menu. - Check main board.

Chapter 4

Function Test & Alignment Procedure

4-1 Service Mode (This section links to common service manual 4-2)

1. Turn on the projector
2. Do the following actions sequentially to get into service mode
   (1) Press "Power", "Left", "Left" and "Menu" buttons sequentially on remote controller.
   (2) Service Mode will be shown.
   (3) Choose "Exit" to leave the Service Mode after confirming the configuration.

4-2 Defect specification table

Order	Symptom	Pattern	Criteria
1	Bright pixel (dots)	Black pattern	A+B=0
2	Dark pixel(dots)	White pattern	A+B≤4
3	Unstable pixel (dots)	Any pattern	A+B=0
4	Adjacent dark pixel (dots)	Any pattern	A+B=0
5	Bright blemish (Dirty)	Gray 10 pattern	A+B≤4 (diameter <1 inch)
6	Dark blemish (Dirty)	Blue 60 pattern	A+B≤4 (diameter <1 inch)
7	Bright dot on frame	Black pattern	≤1

4-3 Test Inspection Procedure

Update	Change parts					
	Main Board	Firmware	Color Wheel	Lamp Module	Engine Module	Blower
Version Update	v	v				
Color Wheel Index	v		v			
Reset lamp hour				v		
OSD Reset	v	v				
EDID	v					
Re-write Lamp Hour Usage	v					
Rod adjustment					v	
Fan Factory Reset	v	v				v

Note: - If Color appears abnormal after changing Main Board Module, please do Color Wheel index adjustment.

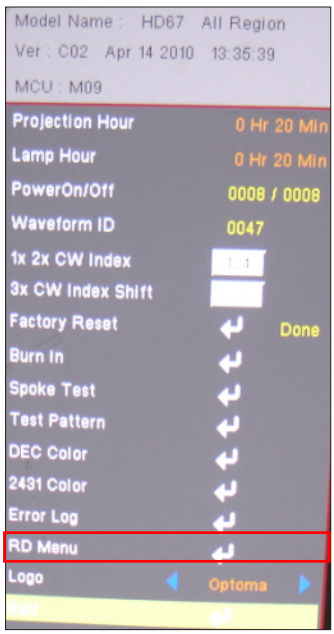
- After changing parts, check the information above table.

4-4 Factory Fan RPM Reset

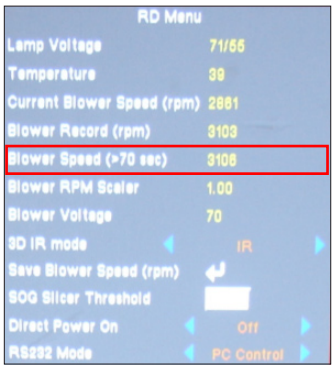
After replace main board, Fan, upgrade system FW,
it's necessary to do:

1. Plug in the power cord, power on the projector, when the "logo" disappear, press "Power", "Left", "Left" and "right" button in sequence.

2. After about 70 seconds, you can check the fan RPM :
   a. Please get into Service Mode (Refer to 4-2)



b. To select “RD MENU”, then press “OK”, Fan detail information will be shown.



Note: After about 70 seconds,If the blower speed(>70 sec) is not between 2800-3200,you must change fan.

4-5 PC MODE

Note: - Test signal: analog 1280 x 720 @60Hz

- Connect VGA IN port of Projector with VGA port of Chroma and connect VGA Out port of Projector with VGA port of Monitor by VGA cable, check if the Projected image and the LCD image are the same.

4-6 Video Performance

1. 3D Test

Procedure	- Test equipment: 1.DVD Player&HQFS format CD Or 2.PC with 3D Graphic card
Inspection item	- 3D test
Inspection Distance	- < 6M
Criteria	- The image should not appear noise, flicker, shadow, shocking, abnormal color.

4-7 Optical Performance Measure

Inspection Condition
- Environment luminance: 2 Lux
- Product must be warmed up for 3 minutes
- Distances from the screen: 2.4 M
- Screen Size: 60 inches diagonal

1. Test equipment

Procedure

- Connect VGA IN port of HD67 with VGA port of Chroma by VGA cable, press "Menu" button, get into OSD mode, the settings are as below:
- "Display mode" is "Presentation", "Brightness" is "50", "Contrast" is "60", and the "Format" is "4:3".
- Please do the Optical Performance Measure.

2. Brightness

Criteria

- 1000 ANSI lumen

3. Full On/Full Off Contrast

Criteria

- 1800:1

4. Uniformity

Criteria

- 65%

Chapter 5

Firmware Upgrade

Section 1: System Firmware Upgrade (This section links to common service manual 5-2)

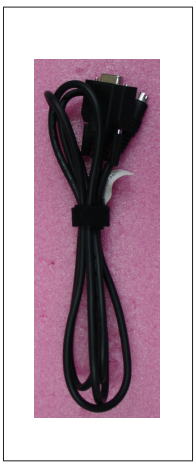
5-1 Equipment Needed

Software: (DDP 2431)

- DLP Composer Lite 9.2
- Firmware
- Library file (Library 9.2)

Hardware:

- Projector
- Power cord: 42.50115G001
- RS232 cable: 42.83618G001
- PC or Laptop



5-2 Firmware Upgrade Procedure

1. Set-up

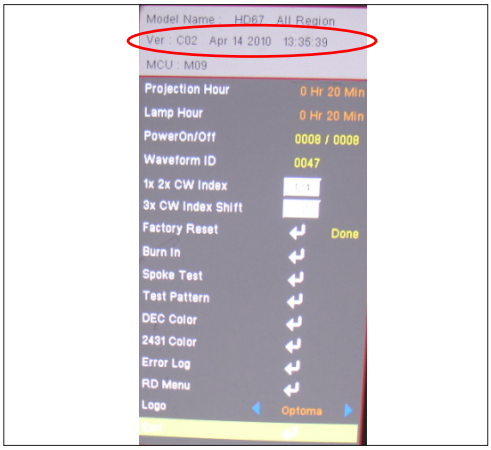
- Hold on "POWER" button and plug in the power cord, the power LED will start to flash until the LED status goes to steady orange, the Temp LED and Lamp LED will light on red.
- Loosen the "POWER" button.
- Connect projector with PC by RS232 cable.

Note: The system fan and the lamp will not operated.

2. Check FW version.

- Re-plug in power cable, then restart the unit and get into the Service mode to check the firmware version.

  (To get into Service mode, please press "Power", "Left", "Left" and "Menu" buttons sequentially.)



Section 2: 8051 Firmware Upgrade Procedure

5-3 Equipment Needed

Software: (DDP 2431- USB)

- Setup _NLINK_en
- Manley USB Driver_NLINK
- xxx_8051_xx.hex

Hardware:

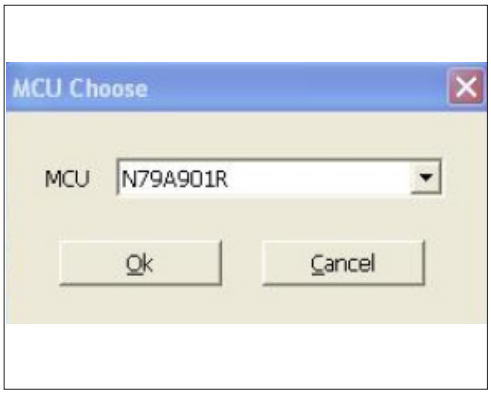
- Projector
- Power cord: 42.50115G001
- USB cable: 42.00286G101
- NLINK Fixture
- PC or Laptop

5-6 USB Driver Upgrade Procedure

1. Set-up

   - Plug in the power cord, the power LED will light on red.
   - Connect VGA Port of projector with NLINK Fixture .
   - Connect NLINK Fixture with PC by USB cable.

5-7 8051 Firmware Upgrade Procedure

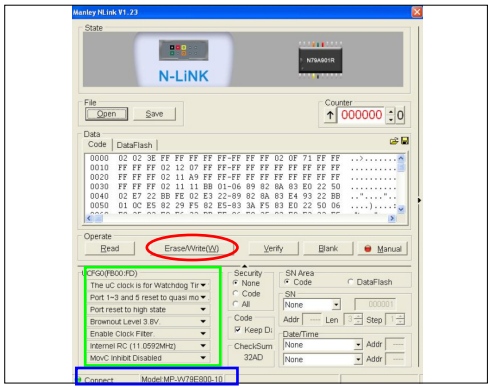


1. Choose the right type of MCU

   - "MCU Choose" picture will appear on the screen, select "N79A901R".

2. Program settings

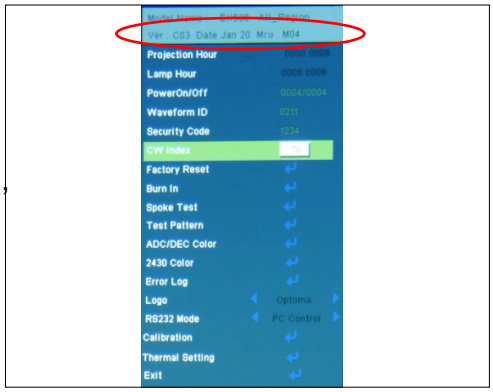
   - Ensure NLINK Fixture and PC are securely connected: the indicator lights on green, and the state is “Connect” (as blue square).
   - Select “Brownout Level 3.8V” (as green square).
   - Select “Internel RC (11.0592MHZ)” (as green square).
   - Click “Erase/Write(W)” to execute 8051 FW upgrade (as red circle).



3. Check 8051 FW version

- Turn on the unit and get into the service mode to check the 8051 FW version.

(To get into service mode, please press “Power”,“Left”, “Left” and “Menu” buttons sequentially.)



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Chapter 6

EDID Upgrade

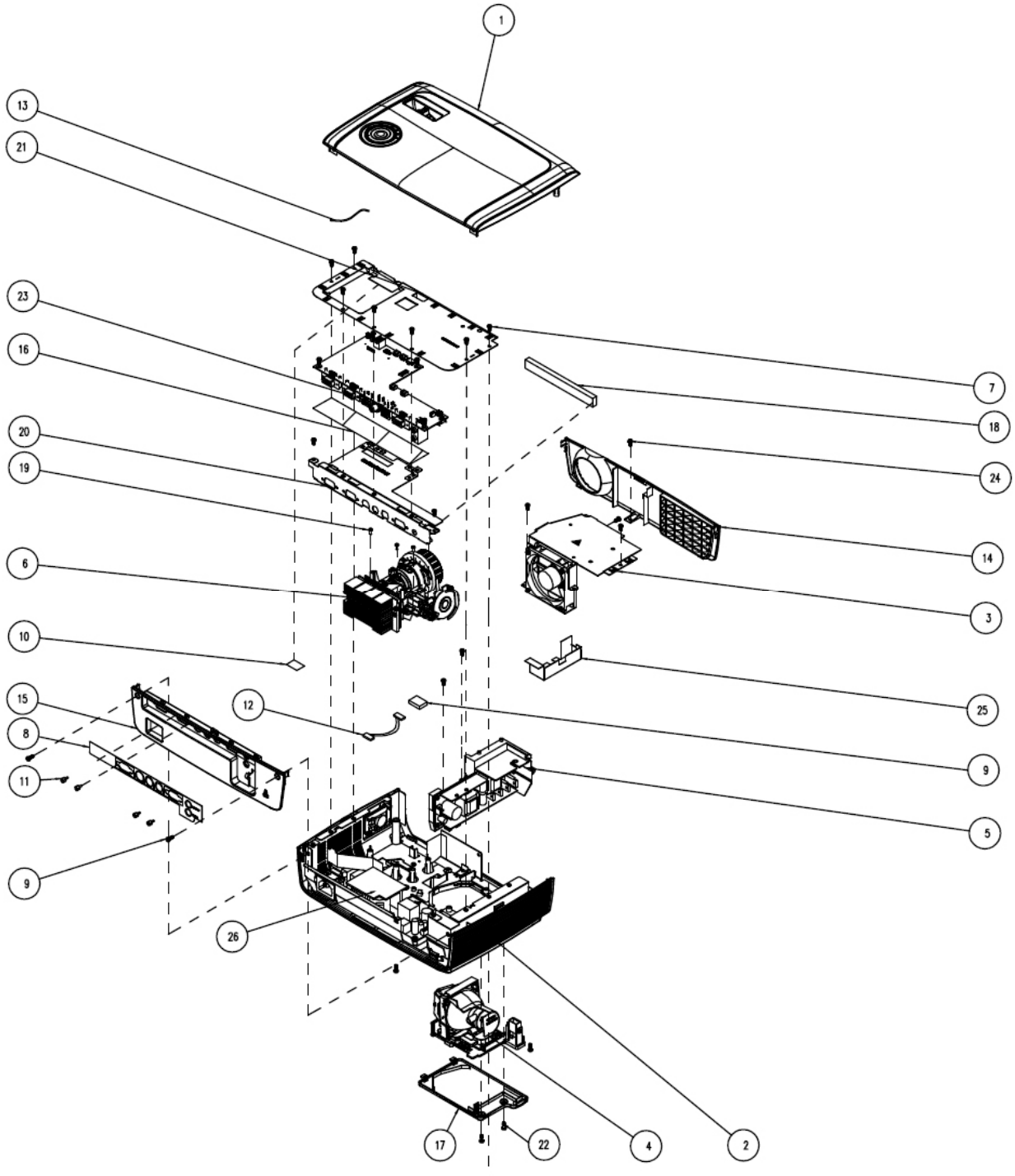
6-1 EDID Introduction

- The upgrade procedure for VGA and HDMI ports please refer to common manual chapter 6.

Appendix A (Exploded Image)

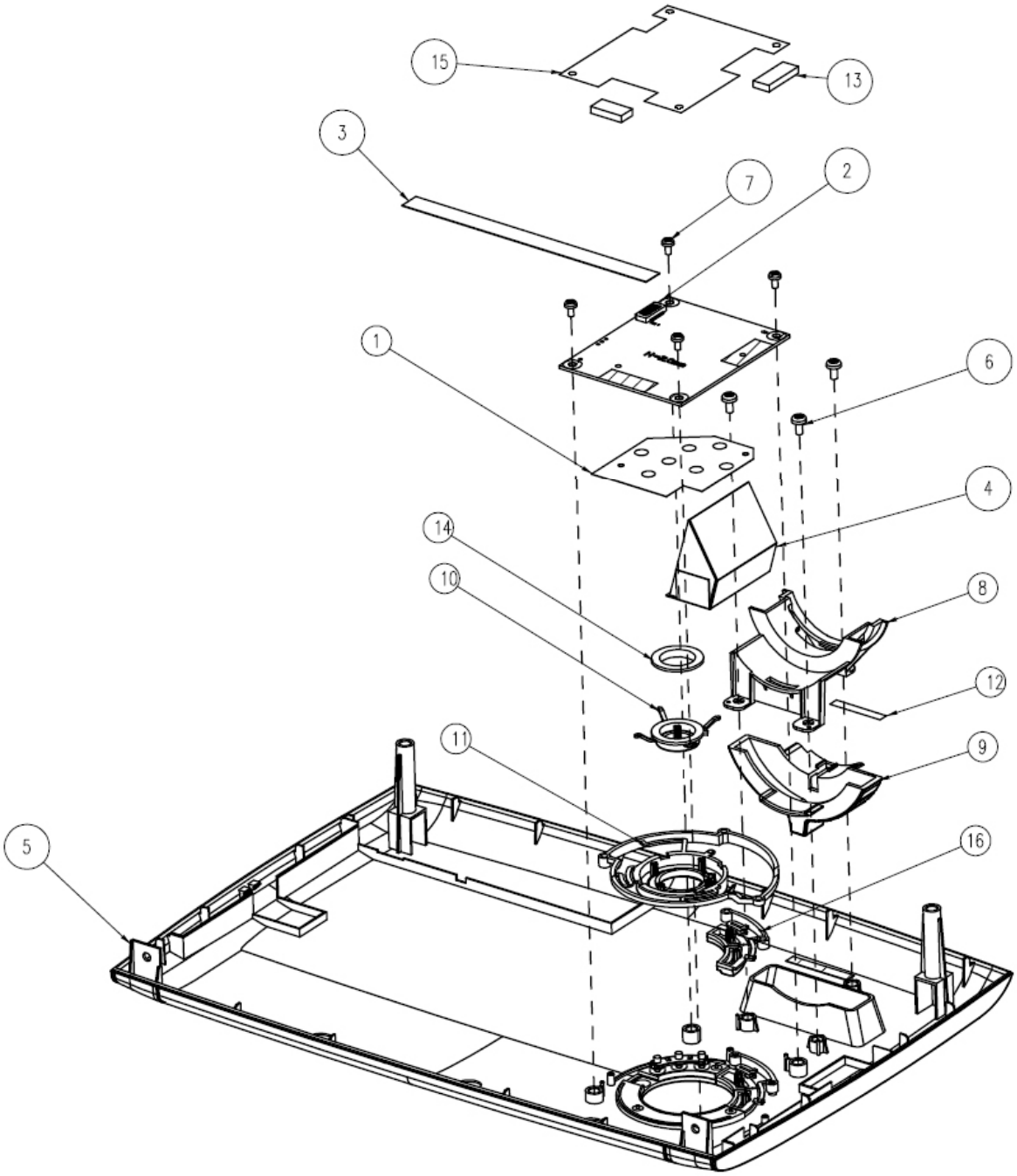
Note: This chapter is only designed to show the exploded image of the projector. For updated part numbers, please refer to RSPL report.

D.C. HD67



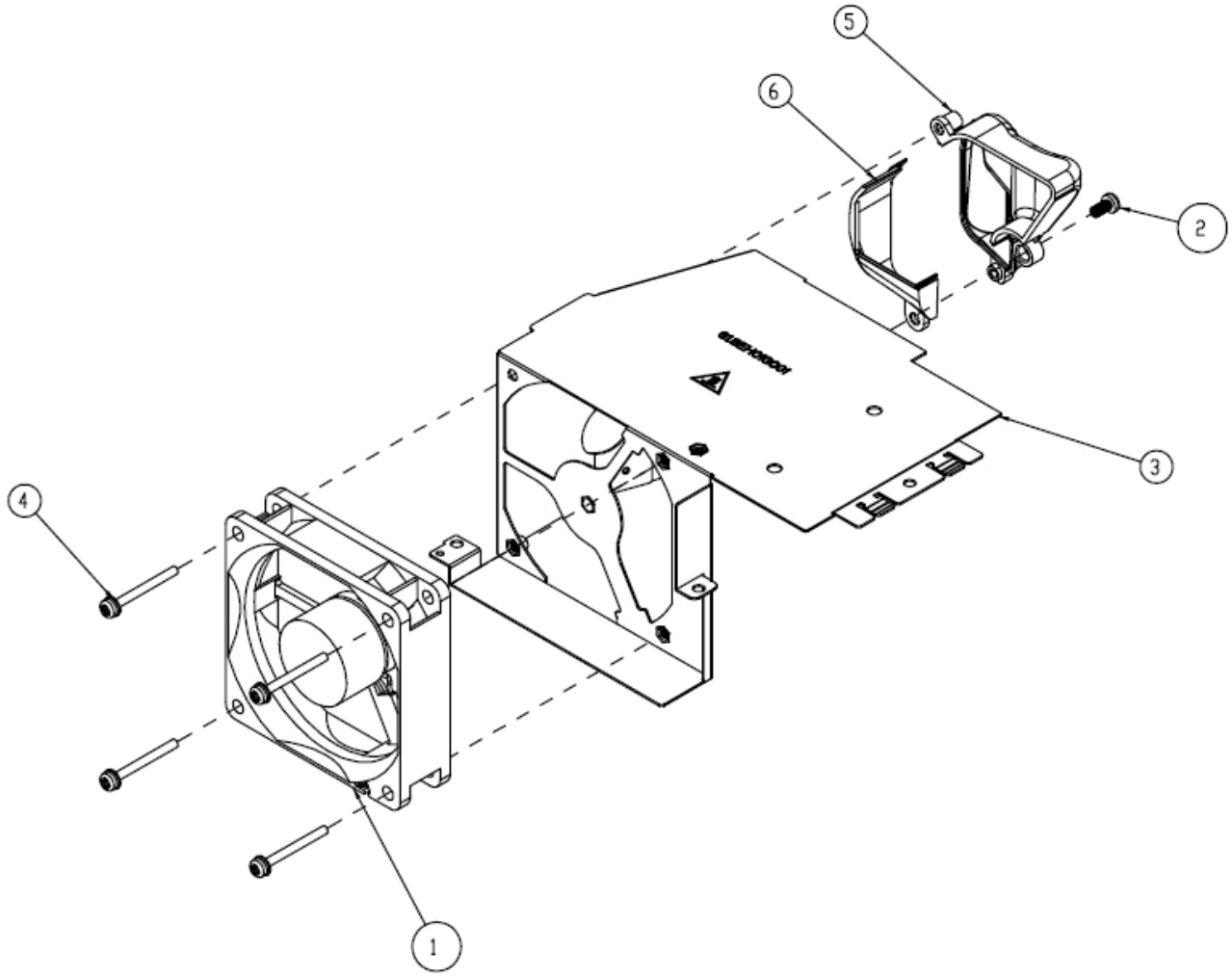
Item	P/N	Description	Parts Supply
1	70.8FF11G001	ASST TOP COVER MODULE HD66	V
2	70.8FF10G001	ASSY BOTTOM MODULE HD66	
3	70.8FF09G001	ASSY ONE FAN MODULE EW536	V
	SP.8EH01GC01	LAMP MODULE FOR PROJECTOR ES526/EX536	V
4	70.8EH05G001	ASSY LAMP MODULE ES526	
5	70.8GY05G001	ASSY LAMP DRIVER MODULE HD67	V
6	70.8GY02G001	ASSY ENGINE MODULE HD67	
7	85.0A123G050	SCREW P/F MECH M3*5 Ni	
	70.8FF21GR01	ASSY IO COVER MODULE FOR HD66(SERVICE)	V
8	35.8GY01G001	LABEL FOR IO COVER HD67	
9	85.1A323G080	SCREW PAN MECH M3*8 BLACK “GREEN”	
10	41.89Z02G001	HDMI CONNECTOR GASKET L15*W10*H1	
11	85.005AGG308	SCREW HEX I/O #4-40 H3.5*L8 NI NYLOK	
12	42.00454G001	W.A 8P 120mm MB TO LVPS X1160	
13	51.00001G001	CABLE TIE PG-YJ-80	
14	70.8FF14G001	ASSY FRONT COVER MODULE HD66	
15	70.8FF12G001	ASSY IO COVER MODULE HD66	
16	51.8FF01G001	MYLAR FOR MB SHIELDING EW536	
	70.8FF22GR01	ASSY LAMP COVER MODULE FOR HD66(SERVICE)	V
17	51.8CS05G021	LAMP COVER PC MN3600H HD66	
18	52.8CS05G002	MB SHIELDING AIR THIGHT JK-1105 PDG-DSU30	
19	85.1A526G060	SCREW PAN MECH M2.6*6 Ni NYLOK	
20	61.8CS05G021	MAIN BD SHIELDING SECC 0.6T EW536	
21	61.8CS04G001	TOP SHIELDING SECC 0.4T PDG-DSU30	
22	61.00018G003	LOCK SCREW PAN MECH M3*8.5-3.5 BLACK(1018+HEAT TREATMENT)	
23	80.8GY01G001	PCBA MAIN BD FOR HD67 [PROJECTOR]	V
24	85.1A123G060	SCREW PAN MECH M3*6 NI	
25	51.8CS19G001	COLOR WHEEL MYLAR PDG-DSU30	
26	70.8FF07G001	ASSY LVPS MODULE EW536	V

ASSY TOP COVER MODULE



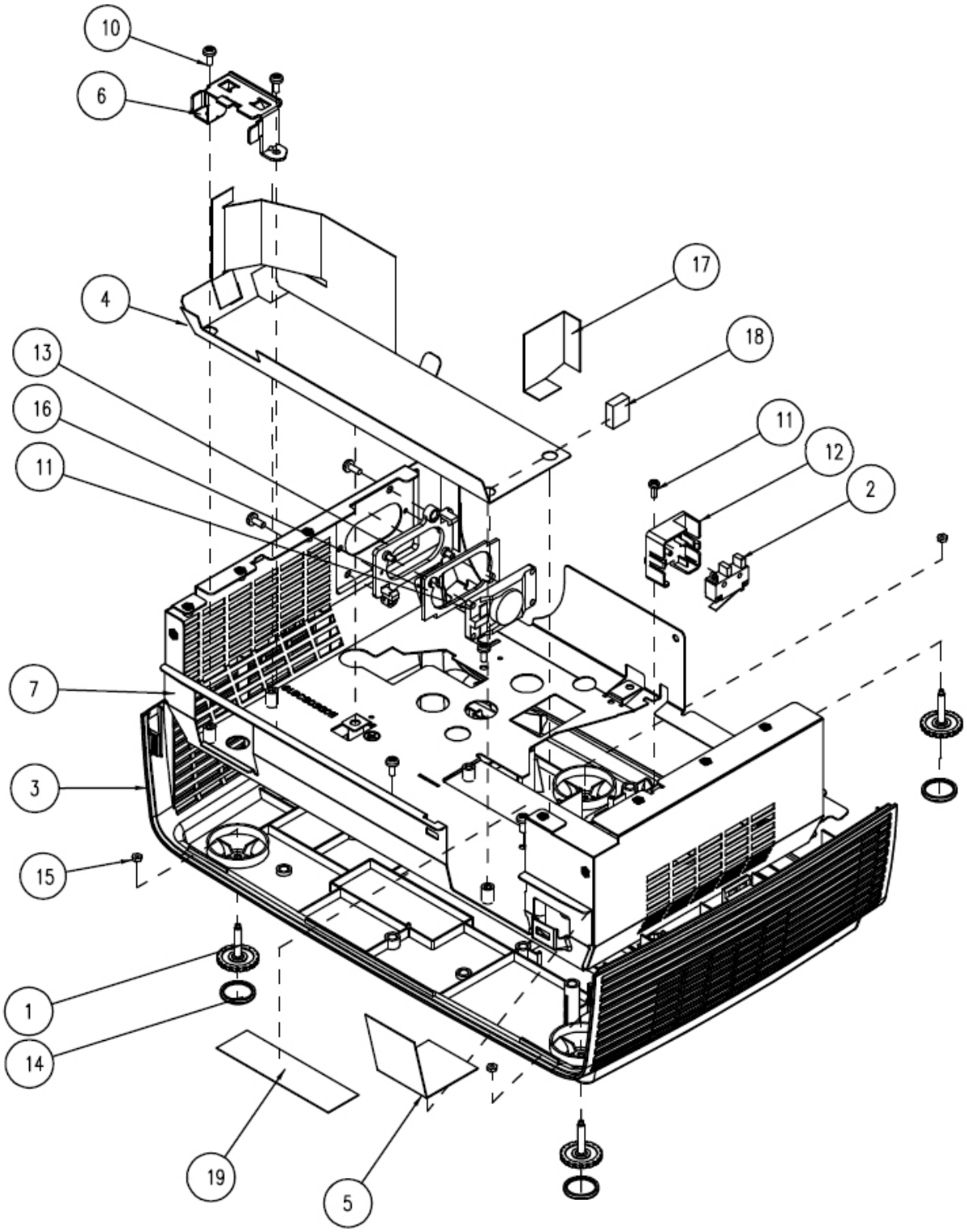
Item	P/N	Description	Parts Supply
1	51.8EH09G001	METAL DOME ES526	
2	80.8EH03G001	PCBA KEYPAD BOARD FOR Z15 GENERIC	V
3	42.00304G101	FFC KEYPAD TO FORMATTER BD 16P P=0.5 122mm 1209S	
4	51.8CS13G001	TOP COVER MYLAR PDG-DSU30	
5	75.8EH01G031	BUY ASST TOP COVER MODULE HD66	V
6	85.1A123G050	SCREW PAN MECH M3*5 Ni	
7	85.3A126G040	SCREW CAP HEAD D7.0 MECH M2.6*4 Ni	
8	51.8CS08G012	ZOOM RING PC MN3600H HD66	
9	51.8CS08G001	ZOOM RING PC MN3600H BLACK PDG-DSU30	
10	51.8EH05G011	ENTER KEY PC MN3600H HD66	
11	51.8EH06G031	LED LENS PC-121 ES526	
12	51.8CS17G002	TEFLON MYLAR 8mm*74mm 0.2t ZOOM RING PDG-DSU30	
13	41.89S18G001	EMI GASKET W7*H4*L20 (BLACK)	
14	52.88N23G001	SPONGE FOR ENTER KEY EP721	
15	51.8EH11G001	KEYPAD BOARD MYLAR ES526	
16	51.8EH04G031	KEYPAD PC MN3600H HD66	

ASSY FAN SHIELDING MODULE



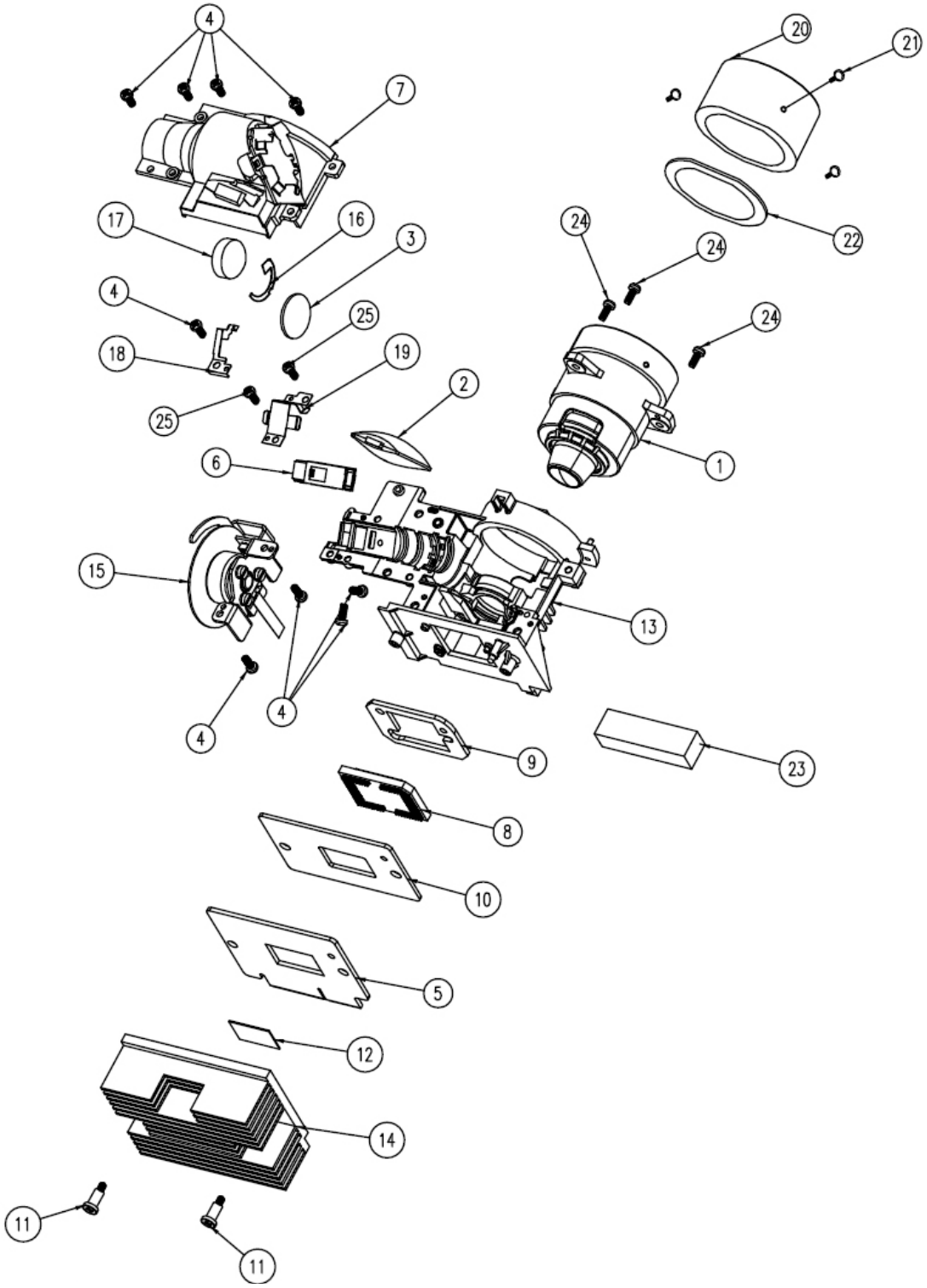
Item	P/N	Description	Parts Supply
1	49.8CP02G002	SUNON 70*70*20mm AXIAL FAN, KDE1207PKV1. MS.B3001.AF.GN, SHRINK TUBE	V
2	85.1A123G060	SCREW PAN MECH M3*6 NI	
3	61.8EH01G001	SCREW PAN MECH M3*6 NI	
4	85.1F123G260	SCREW PAN MECH E/SF M3*26 Ni	
5	61.8EH03G001	ONE FAN DUCT AL ALLOY ES526	
6	51.8EH08G001	ONE FAN DUCT CAP PPS+GF40% ES526	

ASSY BOTTOM COVER MODULE



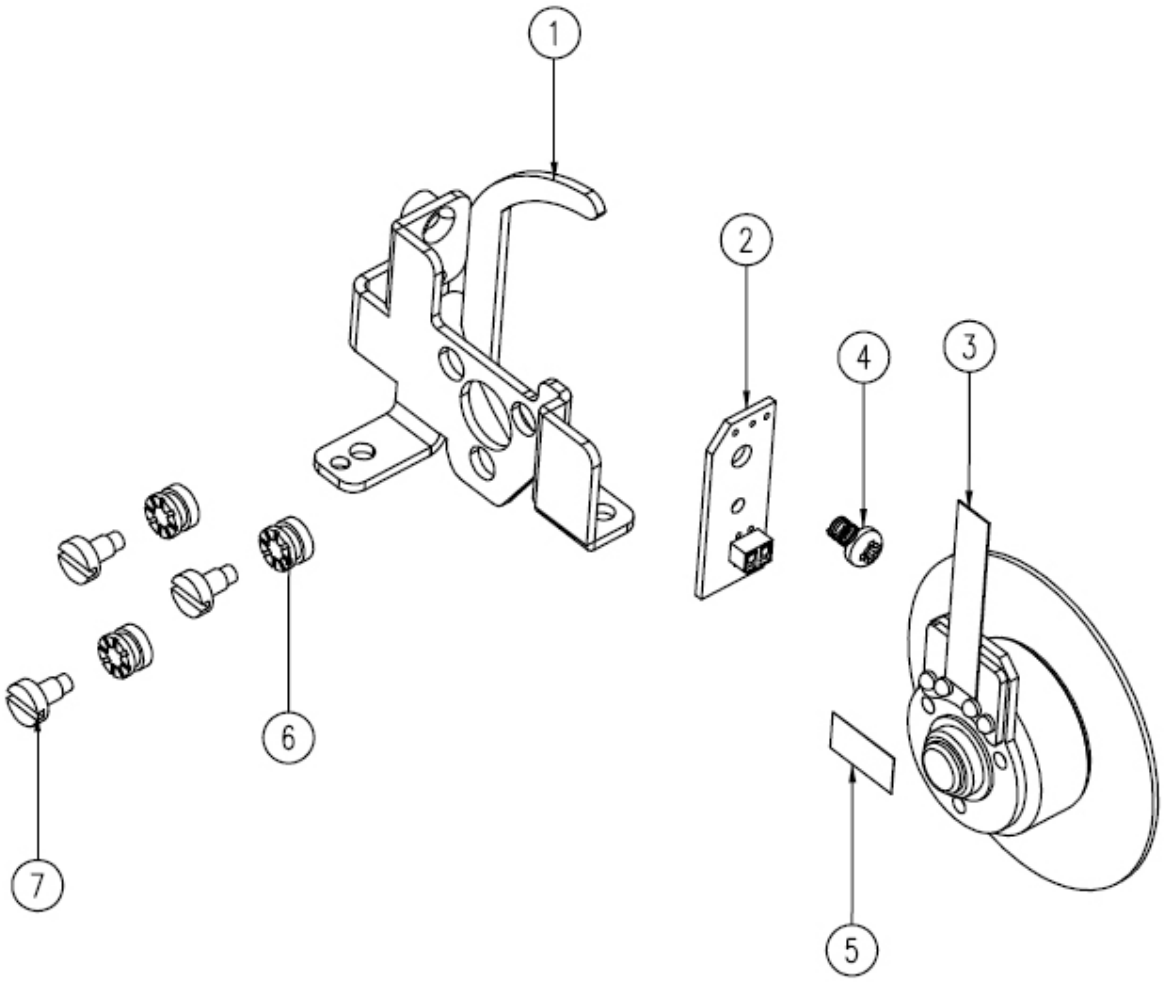
Item	P/N	Description	Parts Supply
1	51.8EH05G001	ENTER KEY PC MN3600H ES526	
2	75.8AA04G001	BUY ASSY INTERLOCK SWITCH 1409X	V
3	51.8CS02G021	BOTTOM COVER PC MN3600H HD66	V
4	51.8EH10G001	LVPS MYLAR ES526	
5	51.8CS15G001	K-LOCK MYLAR PDG-DSU30	
6	61.88T19G001	AC INLET BRACKET FOR X1160E	
7	61.8CS03G012	BOTTOM SHIELDING SECC 0.6T EW536	
8	85.1A123G060	SCREW PAN MECH M3*6 NI	
9	85.1A626G050	SCREW PAN MECH M2.6*5 BLACK NYLOK	
10	85.1C224G051	SCREW PAN MECH M4*5 COLOR W/TOOTH WASHER Cr3+	
11	49.8CQ01G001	SPEAKER 2W 16OHM DAB128 90mm X1261	V
12	51.89W18G001	LIMIT SWITCH HOLDER PC MN3600H BLACK TDP-SP1	
13	51.89W17G001	SPEAKER HOLDER PC MN3600H BLACK TDP-SP1	
14	52.86801G001	RUBBER FOOT REAR DP725	
15	86.00122G020	YH-NUT-M2.0*2.0*4.0	
16	52.89W04G002	SPEAKER HOLDER PORON L-32 TDP-SP1	
17	51.8CS18G001	FRONT MYLAR PDG-DSU30	
18	41.8EH01G001	EMI GASKET W6*L6*H10	
19	41.88T01G001	EMI L85*W20	

ASSY ENGINE MODULE



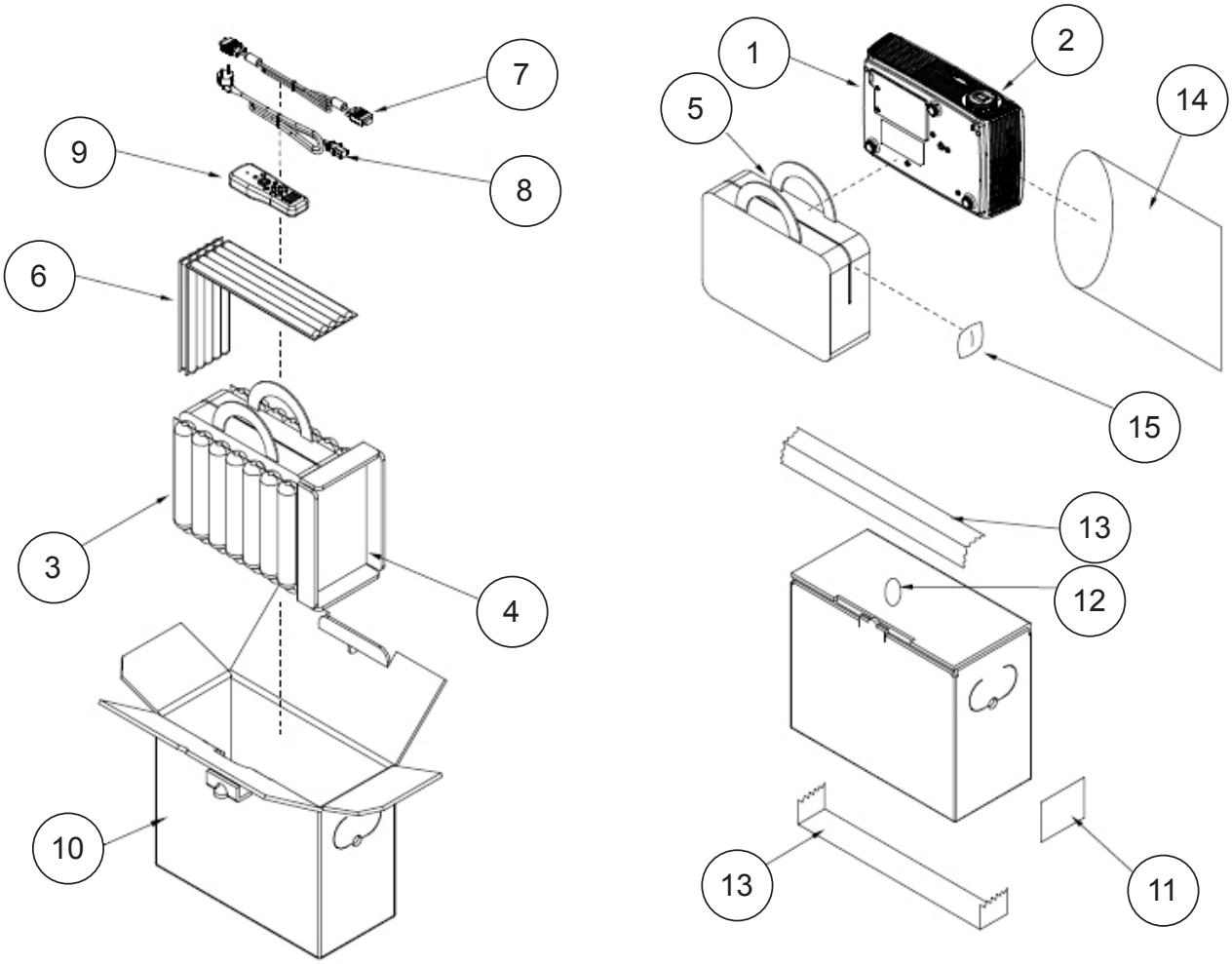
Item	P/N	Description	Parts Supply
	70.8GY01GR01	ASSY ENGINE MODULE FOR HD67(SERVICE)	V
1	23.8ER01G002	YO YM31Z 1.1X P-LENS CHANG UV TO RETAIN-ER	
2	70.8FP08G001	ASSY RELAY MODULE M410HD	
3	23.8AH20G011	YO CONDENSER 1 FOR A15W	
4	85.1A526G060	SCREW PAN MECH M2.6*6 Ni NYLOK	
5	80.8EH02G001	PCBA DMD BOARD FOR ES526	V
	70.8GY04GR01	ASSY ROD MODULE FOR HD67(SERVICE)	V
6	70.8GY04G001	ASSY ROD MODULE HD67	
7	70.8CP10G001	ASSY ENGINE BOTTOM COVER Z15	
8	48.8ER01G001	DMD 1280X720 PIXEL .62” 720P 2xLVDS Type-S450 “TI”	V
9	52.8CP01G001	DMD RUBBER X1161	
10	52.8CP02G001	DMD BOARD RUBBER X1161	
11	85.4A826G118	STEP SCREW FOR TYPEX DMD M2.6*11.8mm,X15	
12	52.8CP04G001	S450 0.55” XGA/SVGA DMD thermal pad, FUJIPO-LY, Sarcon XR-HE, 18.4x12.5x0.5 mm	
13	70.8FF08G001	ASSY ENGINE BASE EW536	
14	61.8CP02H002	DMD HEATSINK AL-ALLOY Z15 X1161	
15	70.8GY03G001	ASSY COLOR WHEEL MODULE HD67	
16	61.8EF03G001	CONDENSER LIGHT STOP EX615	
17	23.8AH20G012	YO CONDENSER 2 FOR A15W	
18	61.8FF01G001	ROD COVER FOR EW536	
19	61.88N12G001	ROD SPRING SUS301,X15	
20	51.8CS07G011	FOCUS RING PC MN3600H HD66	
21	85.WA321G035	SCREW TAP FLAT HEAD M1.7*3.5 Zn	
22	51.8CS20G001	DUSTPROOF MYLAR FOR FOCUS RING PDG-DSU30	
23	41.87Y03G001	EMI GASKET W13*H6*L35	
24	85.5A526G060	SCREW BINDING MECH M2.6*6 Ni NYLOK	
25	85.1A526G050	SCREW PAN MECH M2.6*5 Ni NYLOK	

ASSY COLOR WHEEL MODULE Z15



Item	P/N	Description	Parts Supply
	70.8GY02GR01	ASSY COLOR WHEEL MODULE FOR HD67 (SERVICE)	V
1	61.8CP03G001	CW BRACKET SECC X1161	
2	80.8EG04G002	PCBA PHOTO SENSOR BOARD FOR HD20	
3	23.8GY19G011	YO CW R100C23B72G90M30Y45_URD20VA MOTOR	
4	85.1A126G040	SCREW PAN MECH M2.6*4 Ni	
5	51.82Y29G001	TAPE 3M J350 10*5mm FOR COLOR WHEEL DP715	
6	52.83615G011	COLOR WHEEL DISC RUBBER 3.8MM CPC	
7	61.83628G001	COLOR WHEEL SHOULDER SCREW,EzPro755	

A.K.



Item	P/N	Description	Parts Supply
1	DC.8GY01G001	D.C. HD67	
2	75.8CS02G011	BUY ASSY LENS CAP MODULE HD66	
3	56.8EH03G001	PACKING BOTTOM AIR BAG 440*600 W/CARRY BAG ES526	
4	55.8EH02G001	PARTITION PAPER ES526	
5	53.8EH01G001	SOFT CARRY BAG ES526	V
6	56.8EH04G001	PACKING TOP AIR BAG 240*900MM W/CARRY BAG ES526	
7	42.00200G002	CABLE VGA 15P 1.8M BLK EP739	
8	42.00120G001	CABLE POWER CORD 1.8M SP-023/IS-14 EU-ROPE	
9	45.8FF01G002	INFRARED REMOTE CONTROL HD66 (white)	V
10	55.8EH01G001	CARTON AB FLUTE 18KG 395*165*314MM ES526	V
11	35.52302G091	LABEL CARTON 108*92 BLANK	
12	35.00040G001	LABEL 30mm,GREEN	
13	51.0000AG011	PACKING TAPE 72MM FOR OPTOMA	
14	51.52109G005	PE BAG 450*350*0.07 FOR OPTOMA EP720	
15	57.00001G001	PACK SIO2 DRIER 20g	

Appendix B

I. Serial Number System Definition

Serial Number Format for Projector (take ES526 as example)

Q 8GY 0 06 AAAAA C 0001

① ② ③ ④ ⑤ ⑥ ⑦

① : Q = Optoma

② : 8GY = Project Code

③ : 0 = Last number of the manufacture year (ex:2010 = 0)

④ : 06 = week of the manufacture year (ex:the sixth week of the year = 06)

⑤ : AAAAA = not-defined

⑥ : C = Manufacture factory

⑦ : 0001 = Serial Code

EX: Q8GY006AAAAAC0001

This label "Q8GY006AAAAAC0001" represents the serial number for HD67. It is produced at CPC on sixth of 2010. Its serial code is 0001.

II. PCBA Code Definition

PCBA Code for Projector

A	B	XXXXXXXXXX	C	XXX	EEEE
①	②	③	④	⑤	⑥

① : ID

② : Vendor Code

③ : P/N

④ : Revision

⑤ : Date Code

⑥ : S/N